

Appendix C

Floodplain/Wetlands Assessment

Floodplains and wetlands are protected from adverse Federal actions by a variety of laws, regulations, and orders. This Floodplain/Wetlands Assessment identifies the floodplains and wetlands potentially affected under each of the alternatives addressed in the Tucson Electric Power Company (TEP) Sahuarita-Nogales Transmission Line Draft EIS discusses the effects of the proposed action on the floodplain and wetlands and considers alternatives to the proposed action and mitigation, which may avoid adverse affects and incompatible development in the floodplains and wetlands. A detailed description of the proposed project, including project purpose and need, is provided in Chapter 1. The alternatives identified in this assessment are the same corridor alternatives described in detail in Chapter 2. Because the final siting and engineering of the transmission line has not yet been completed, alternatives that specifically address floodplain/wetland impacts have not yet been developed. Therefore, measures to avoid and minimize wetland impacts can only be discussed in general terms (see Section C.3, Impact Avoidance).

C.1 INTRODUCTION AND METHODS

This assessment was prepared to comply with Executive Order (EO) 11988, *Floodplain Management*, and E.O. 11990, *Protection of Wetlands*. Under EO 11988, Federal agencies must "...provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains..." Furthermore, "If an agency has determined to, or proposes to, conduct, support, or allow an action to be located in a floodplain, the agency shall consider alternatives to avoid adverse effects and incompatible development in the floodplains." Under E.O. 11990, Federal agencies "...shall provide leadership and shall take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities..."

The U.S. Department of Energy (DOE) requirements for compliance with EOs 11988 and 11990 are found in Title 10, *Code of Federal Regulations* (CFR), Part 1022, "Compliance with Floodplain/Wetlands Environmental Review Requirements." A floodplain/wetlands assessment consists of a description of the proposed action, a discussion of its effects on the floodplain and wetlands, and consideration of the alternatives. The EOs direct Federal agencies to implement floodplain and wetland requirements through existing procedures, such as those established to implement the *National Environmental Policy Act* of 1969 (NEPA) to the extent practicable.

If DOE determines that there is no alternative to implementing a proposed project in a floodplain, a brief statement of findings must be prepared. This statement of findings would include a description of the proposed action, an explanation indicating why the project must be located in a floodplain, a list of alternatives considered, measures that will be taken to comply with state and local floodplain protection standards, and a description of the steps to be taken to minimize adverse impacts to the floodplain.

For the purposes of this assessment, the extent of the 100-year floodplain along the Santa Cruz River and its tributaries was determined from Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM). The maps in this floodplain document are based on 2002 digital FIRM files for Pima and Santa Cruz counties. The FIRM files for Pima and Santa Cruz counties do not cover tribal or U.S. Department of Agriculture Forest Service (USFS) lands. In addition, the County FIRM files do not include delineations for a large portion of the "Southlands" area of Pima County¹. In an attempt to address these deficiencies in coverage, SWCA contacted the Coronado National Forest (CNF) and requested information regarding the location of any floodplains and wetlands on USFS lands within any of the alternative corridors; there are no tribal lands in the project area. According to B. Lefevre, CNF

¹ "Southlands" refer to recently annexed lands in Pima County located south of Interstate-10 and east of Interstate-19.

Watershed Specialist, the CNF has not mapped any floodplains and wetlands on CNF lands (USFS 2003). SWCA also reviewed soil survey maps of Pima and Cochise Counties in an attempt to find any useful floodplain information (USDA 1979). However, these maps proved unsatisfactory because the material is dated, the soil information was mapped at a scale that was inadequate for the purposes of this project, and there was a weak correlation between soils that are associated with floodplains and floodplain boundaries as defined by FEMA.

C.1.1 Floodplains Potentially Affected

The FIRM maps indicate that the following tributaries occurring in the project area could be part of the 100-year floodplain: Sopori, Toros, Diablo, Las Chivas, and Mariposa Canyon Wash (Figures 1-5). Additional unmapped floodplains may also occur in the project area. In those areas where the regulatory floodplains have not been delineated, the county engineer may require the project proponent to establish the regulatory floodplain and floodway limits through a hydrologic and hydraulic study prepared by an Arizona registered professional civil engineer.

C.1.2 Wetlands Potentially Affected

Wetlands are a subset of waters of the United States. Waters of the United States are defined in the *Clean Water Act* (CWA) as “surface waters, including streams, streambeds, rivers, lakes, reservoirs, arroyos, washes, and other ephemeral watercourses and wetlands” (33 CFR Part 328). Waters of the United States on the project area are under the jurisdiction of the U.S. Army Corps of Engineers (USACE), and activities that result in impacts to waters of the United States must be permitted by USACE under Section 404 of the CWA. A Section 404 Permit must be obtained by any person, agency, or entity, either public or private, proposing a project that will result in a discharge of dredged or fill material into waters of the United States, including wetlands.

C.1.2.1 Ephemeral Watercourses

Each of the proposed corridor alternatives crosses numerous ephemeral watercourses (an ephemeral watercourse flows briefly in direct response to precipitation in the immediate vicinity). No perennial streams (a stream that flows throughout the year; a permanent stream), lakes, or reservoirs occur within the proposed corridors.

C.1.2.2 Wetlands

Wetlands are defined in EO 11990 as “areas that are inundated by surface or ground water with a frequency sufficient to support and under normal circumstances does or would support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflows, mud flats, and natural ponds.”

To be a jurisdictional wetland (one subject to regulation by USACE), an area must meet three criteria according to the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands*: presence of hydric soils, hydrophytic vegetation, and wetland hydrology. Hydric soils are soils with the seasonal high-water table within one inch (2.5 cm) of the surface of the ground for at least one week of the growing season. Hydrophytic vegetation may grow in soils at least periodically depleted of oxygen as a result of water saturation. Hydrophytic vegetation might be able to grow only in wetlands (obligate wetlands vegetation) or may be found in upland environments as well (facultative wetlands vegetation). Wetlands hydrology requires permanent or temporary inundation of soils for at least one week during the growing season and the resultant depletion of oxygen.

Wetlands serve a variety of functions within the ecosystem. Consideration of these functions is essential in the evaluation of potential impacts. Wetland functions and values include water quality preservation, flood protection, erosion control, biological productivity, fish and wildlife habitat, cultural values, aesthetic values, economic values, and scientific values.

No wetlands (either within or outside of USACE jurisdiction) were found in the proposed project corridors during field surveys to identify habitat for wetland-dependent plant and animal species, and none were identified by USFS (USFS 2003). There may be small areas of potential wetlands within the proposed corridors that are associated with manmade stock ponds and impoundments.

C.2 POTENTIAL IMPACTS ON FLOODPLAINS AND WETLANDS

The following discussion evaluates the potential impacts of each alternative to floodplains in the project area. TEP would site the transmission line to avoid any wetlands, so that no wetlands would be impacted by

the proposed project. The discussion of impacts to floodplains is organized by geographic area in order to take advantage of geographic overlap between the three corridor alternatives: Western, Crossover, and Central. These geographic areas are the North Segment, North Central Segment, South Central Segment, East-West Segment, and South Segment (Figure 1). Common to all three corridor alternatives are the North Segment and the South Segment.

All of the corridor alternatives involve some construction in floodplains. The four activities to be conducted in floodplains are pole placement, and the construction of pole laydown areas, access roads, and the South Substation expansion (located in the North Segment of all three corridor alternatives). For the purposes of this assessment, the following assumptions were made regarding these potential impacts: (1) the impact of individual pole placement would be 25 ft² (2.3 m²) (see Table 4.1-1 for overall pole footprints); (2) pole laydown areas would each require about 1,850 ft² (172 m²); (3) access roads would be 12 ft (3.7 m) wide; and (4) the South Substation expansion would require 58,500 ft² (5,440 m²). Projected impacts to floodplains were based on maps provided by Electrical Consultants Inc. showing locations of poles, pole laydown areas, and access roads (ECI 2003).

As permanent structures in floodplains, the South Substation expansion and corridor access roads could directly impact floodplain values by increasing flood elevation and frequency. An increase in flood elevation could result in an increase in downstream flood loss and a long-term negative impact on lives and property. Impacts resulting from pole placement and construction of laydown areas would be negligible. Neither activity would negatively impact flood elevation or flood frequency. Consequently, there would be no direct or long-term effects on floodplain values or lives and properties.

C.2.1 Western Corridor

Based on FEMA flood maps, the Western Corridor and Crossover Corridor alternatives would have the greatest potential impact on floodplains in the project area (see Table C.2.1-1). For these two alternative corridor routes, total potential impact within the 100-year floodplain is estimated at about 1.97 acres (0.80 ha).

Table C.2.1-1. Estimated Impacts to Floodplains by Alternative.

Segment	Western (acres)	Crossover (acres)	Central (acres)
North	1.34	1.34	1.34
North Central	0.54	0.54	0.15
South Central	0.00	0.00	0.00
East-West	-	0.00	-
South	0.09	0.09	0.09
TOTAL	1.97	1.97	1.58

“-” means corridor does not pass through this segment.

North Segment. There would be no poles, pole laydown areas, or new access roads in the 100-year floodplain. The South Substation expansion would impact 58,500 ft² (5,440 m²) of 100-year floodplain.

North Central Segment. There would be three poles confirmed and one likely additional pole, four pole laydown areas, and 1,327 ft (404 m) of new access roads (total of 15,924 ft² [1,480 m²]) in the 100-year floodplain.

South Central Segment. There would be no poles, pole laydown areas, or new access roads in the 100-year floodplain.

South Segment. There would be one pole, one pole laydown area, and 184 ft (56 m) of new access roads

C.2.2 Central Corridor

The Central Corridor Alternative would have the least impact to the 100-year floodplain, approximately 1.58 acres (0.64 ha).

North Segment. There would be no poles, pole laydown areas, or new access roads in the 100-year floodplain. The South Substation expansion would impact 58,500 ft² (5,440 m²) of 100-year floodplain.

North Central Segment. There would be five poles confirmed and two poles probable, no laydown areas, and 543 ft (166 m) of new access roads (6,516 ft² [605 m²]) in the 100-year floodplain.

South Central Segment. There would be no poles, pole laydown areas, or new access roads in the 100-year floodplain.

South Segment. There would be one pole, one pole laydown area, and 184 ft (56 m) of new access roads (total of 2,208 ft² [205 m²]) in the 100-year floodplain.

C.2.3 Crossover Corridor

North Segment. There would be no poles, pole laydown areas, or new access roads in the 100-year floodplain. The South Substation expansion would impact 58,500 ft² (5,440 m²) of 100-year floodplain.

North Central Segment. There would be three poles confirmed and one likely pole, four pole laydown areas, and 1,327 ft (404 m) of new access roads (total of 15,924 ft² [1,480 m²]) in the 100-year floodplain.

East-West Segment. There would be no poles, pole laydown areas, or new access roads in the 100-year floodplain.

South Central Segment. There would be no poles, pole laydown areas, or new access roads in the 100-year floodplain.

South Segment. There would be one pole, one pole laydown area, and 184 ft (56 m) of new access roads (total of 2,208 ft² [205 m²]) in the 100-year floodplain.

C.2.4 No Action Alternative

Under the No Action Alternative, there would be no immediate change in potential impacts to floodplains in the proposed corridors. However, future proposals to develop land parcels in the project area could affect floodplains.

C.3 IMPACT AVOIDANCE

There are no large areas of wetlands in the proposed project corridors. The transmission line would be sited to avoid any small areas of wetlands in the proposed project corridors. Impacts to floodplains would be avoided to the extent possible by siting access roads and pole laydown areas outside floodplains, and spanning floodplains where feasible. Impacts to floodplains resulting from the South Substation expansion would be unavoidable, however, because the South Substation was originally constructed in the 100-year floodplain, and the proposed project is designed to connect to the existing electrical grid at this location.

TEP would be required to comply with the floodplain protection standards of Pima and Santa Cruz Counties, the Arizona Department of Environmental Quality, and the USFS. These standards require that all structures associated with the power line installation be flood-proofed or elevated at least 1 ft (0.3 m) above the base flood elevation. In the project area, this would apply to the South Substation expansion and corridor access roads. As discussed earlier, the poles, though permanent structures, would not require any specific mitigation since they would not have an effect on flood elevations. Similarly, the pole laydown areas would not affect flood elevations because they would be temporary. Finally, getting a Floodplain Permit for this project would be contingent on concurrent acquisition of any CWA Section 401 (state certification) and 402 (National Pollutant Discharge Elimination System) permits, if necessary.